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(71) Applicant (for all designated States except US): **UNIVERSITY OF IOWA RESEARCH FOUNDATION**  
[US/US]; Oakdale Research Campus, 100 Oakdale Campus #214 TIC, Iowa City, IA 52242-5000 (US).

(71) Applicants and

(72) Inventors: **ENGELHARDT, John, F.** [US/US]; 8 Laredo Court, Iowa City, IA 52246 (US). **ZHANG, Liang** [US/US]; Oakdale Research Campus, 100 Oakdale Campus #214 TIC, Iowa City, IA 52242 (US).

(74) Agents: **CLISE, Timothy, B.** et al.; P.O. Box 2938, Minneapolis, MN 55402 (US).

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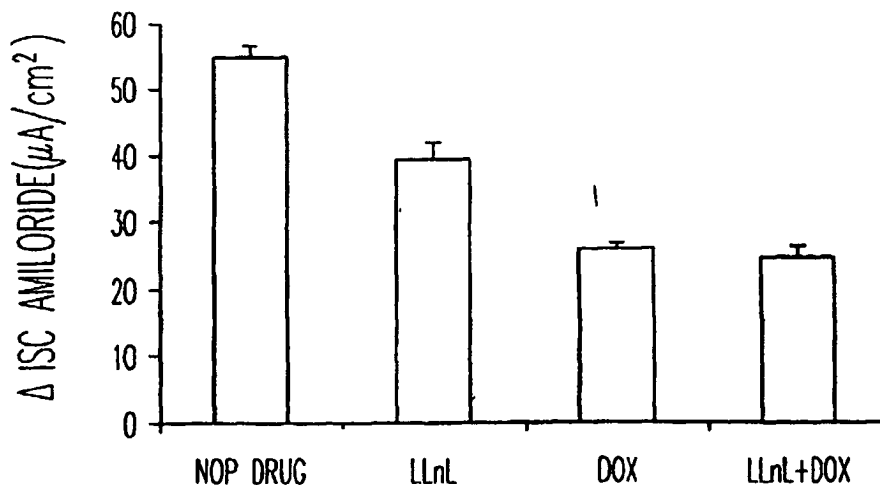
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **PHARMICO-GENE THERAPY OF EPITHELIAL SODIUM CHANNEL ASSOCIATED DISORDERS**



(57) Abstract: Agents and methods to alter epithelial sodium channel (EnaC) activity.

WO 2004/089423 A3

## INTERNATIONAL SEARCH REPORT

International Application No

PC/US2004/009950

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 G01N33/68 A61K48/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, MEDLINE, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/75365 A (ENGELHARDT JOHN F ; UNIV IOWA RES FOUND (US); DUAN DONGSHENG (US)) 14 December 2000 (2000-12-14) discussion on page 82 ff. page 79, line 1 - page 80, line 3; claims 82,83	1-59
X	MAITRA R ET AL: "Increased functional cell surface expression of CFTR and DeltaF508-CFTR by the anthracycline doxorubicin." AMERICAN JOURNAL OF PHYSIOLOGY. CELL PHYSIOLOGY. MAY 2001, vol. 280, no. 5, May 2001 (2001-05), pages C1031-C1037, XP002302512 ISSN: 0363-6143 abstract	1-59

-/-

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

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\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*G\* document member of the same patent family

Date of the actual completion of the international search

21 January 2005

Date of mailing of the international search report

03.03.05

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax (+31-70) 340-3016

Authorized officer

Griesinger, I

## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/US2004/009950

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98/53839 A (LALLEMAND JEAN YVES ; BARTHE JOEL (FR); LENOIR GERARD (FR); ANNEREAU J) 3 December 1998 (1998-12-03) abstract; examples 3,4 -----	1-59
X	MALIK BELA ET AL: "ENaC degradation in A6 cells by the ubiquitin-proteasome proteolytic pathway" JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 276, no. 16, 20 April 2001 (2001-04-20), pages 12903-12910, XP002302513 ISSN: 0021-9258 cited in the application page 12908, right-hand column, paragraph 2 abstract -----	1-59
A	WO 02/087306 A (CALLAMARAS NICHOLAS ; SENOYX INC (US); CHANG HONG (US)) 7 November 2002 (2002-11-07) abstract page 12908, right-hand column, paragraph 2 -----	1-59
A	JIANG QINSHI ET AL: "Cellular heterogeneity of CFTR expression and function in the lung: Implications for gene therapy of cystic fibrosis" EUROPEAN JOURNAL OF HUMAN GENETICS, vol. 6, no. 1, January 1998 (1998-01), pages 12-31, XP002302514 ISSN: 1018-4813 abstract; figure 3 -----	1-59
P,X	YAN ZIYING ET AL: "Distinct classes of proteasome-modulating agents cooperatively augment recombinant adeno-associated virus type 2 and type 5-mediated transduction from the apical surfaces of human airway epithelia." JOURNAL OF VIROLOGY, vol. 78, no. 6, March 2004 (2004-03), pages 2863-2874, XP002296726 ISSN: 0022-538X abstract -----	1-59
X	CA 2 302 627 A (CT DE RECH DU CT HOSPITALIER D) 23 September 2001 (2001-09-23)  page 26, paragraph 2 - page 27, paragraph 1; figures 1-3 ----- -/--	11, 13-32, 34,35, 37-55, 58,59

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/009950

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>ZENTNER M D ET AL: "The amiloride-sensitive epithelial sodium channel alpha-subunit is transcriptionally down-regulated in rat parotid cells by the extracellular signal-regulated protein kinase pathway."</p> <p>THE JOURNAL OF BIOLOGICAL CHEMISTRY. 13 NOV 1998, vol. 273, no. 46, 13 November 1998 (1998-11-13), pages 30770-30776, XP002314224 ISSN: 0021-9258 abstract page 30770, left-hand column, paragraph 1 - page 30771, left-hand column, paragraph 3</p>	11, 13-32, 34,35, 37-55, 58,59
A	<p>SPINDLER B ET AL: "CHARACTERIZATION OF EARLY ALDOSTERONE-INDUCED RNAs IDENTIFIED IN A6 KIDNEY EPITHELIA"</p> <p>PFLUEGERS ARCHIV, SPRINGER VERLAG, BERLIN, DE, vol. 434, 1997, pages 323-331, XP001025924 ISSN: 0031-6768 abstract</p>	11, 13-32, 34,35, 37-55, 58,59

## Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

## a. type of material



a sequence listing



table(s) related to the sequence listing

## b. format of material



In written format



in computer readable form

## c. time of filing/furnishing



contained in the international application as filed



filed together with the international application in computer readable form



furnished subsequently to this Authority for the purpose of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. -Additional comments:

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/009950

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: —  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claims 33-53 could be understood to be directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9,12,33,36,56,57 (all claims completely) and claims 10,11,13-32,34,35,37-55, 58,59 (all claims partially)

relates to methods for identifying compounds which modify expression or activity of the epithelial sodium channel (ENaC) AND enhance the transduction efficacy of cells and the medical uses of said compounds.  
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2. claims: 10,11,13-32,34,35,37-55, 58,59 (all claims partially)

relates to methods for identifying compounds which modify expression or activity of the epithelial sodium channel (ENaC) and the medical uses of said compounds.  
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# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US2004/009950

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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